LEACH

A FEDERAL SIGNAL COMPANY

SERVICE MANUAL SUPPLEMENT
AUTOMATED SIDE LOADER
WITH CAT SYSTEM UPGRADE

Wittke Automated Side Loader with Caterpillar electronic system Supplement Manual

TROUBLESHOOTING

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1. Introduction

Troubleshooting is an organized study of the problem and a planned method of investigation and correction.

Think about the following before proceeding:

- Quiz the operator
- What were the warning signs prior to failure?
- Ensure components and wiring are installed per factory specifications
- Do not rule out previous failed attempts
- Work through troubleshooting charts methodically
- Check the obvious things first. Keep it simple
- Many problems can be traced not to one part alone, but to the relationship of one part to another
- For multiple electrical faults, check the common ground locations, common harnesses and power supply
- Learn to read the schematics
- Identify hydraulic system heat build-up using an infra red sensor
- Carry out flow, vacuum and pressure test to hydraulic systems before removing components
- Use the Troubleshooting Guide as a reference only; it may not contain all the answers
- Keep to Maintenance Schedules

2. Reference:

Operation and Maintenance Manual
Schematics: AL8-E015
Overview: AL8-E014

Tool requirements:
Multi meter with Hz % feature
Testing 'spoons' Leach Part #: 723688 and 723705, Caterpillar Part #: 7X-1708 and 7X-1709 (Leach Part # 972214 includes 723688 and 723705)

Deutsch pin puller Leach Part # 723937, Caterpillar Part #: 151-6320

Test site:
ECM plugs C-C7; C-C8

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3. Entry/Exit Conditions

The first consideration in troubleshooting electronic system faults is to ensure that all Entry Conditions are met. If one of the Entry Conditions are not met or, if one of the Exit Conditions exist, the system will not function as intended.

Entry Condition:	System is within electronic and operational parameters. Must meet all Entry Conditions simultaneously before entry
	Note: all Entry Conditions expect ignition to be on, pump switch on
Exit Condition:	System has experienced a condition that will limit operation. Any Exit Condition will force exit

The following pages detail each operational basic functionality in turn and contains tables of entry and exit conditions for each operation.

Prior to embarking upon in depth troubleshooting, technicians should verify that each of the entry conditions are met and none of the exit conditions exist.

4. Pump Control

Basic Functionality

Activate pumps with pump switch on the Control Panel as long as the minimum safe conditions are met. Will switch pump off if a short to battery is detected on any hydraulic solenoid.

Notes: Joystick or switch states that are requesting hydraulic motion will not affect pump-on entry. The logic is that each individual circuit will have its own state machine forcing the operator to re-center the joystick/switch after pump on, before any commands will be allowed.
Pump switch must be cycled to recover from previous forced exit

ENTRY CONDITIONS	EXIT CONDITIONS
Pump switch ON	Pump switch OFF
Access door closed	Access door open
No fault on pump solenoid	Fault detected on pump solenoid
No short-to-battery faults on any functions	Short-to-battery on any function

5. Allison Transmission Program Parameters

The following parameters have been programmed into the transmission ECU at factory.

Note: Brake pedal and joystick trigger must both be depressed for 750rpm to engage
Throttle pedal is disabled while this condition exists

PARAMETER NAME	RPM
Maximum engine speed for PTO engagement	900
Maximum engine speed for PTO operation	1,900
Maximum output speed for PTO engagement	2,000
Maximum output speed for PTO operation	4,000
Maximum output speed for auto neutral	60
Speed to turn on output speed interlock	250-300 (7-10mph)
Speed to turn off output speed interlock	250-300 (7-10mph)
Throttle speed-up	750rpm

6.Manual Pack/Return Control

Basic Functionality

Extend packer blade when proper conditions are met and the operator is holding down the pack button. Retract packer blade when proper conditions are met and the operator is holding down the return button.

Notes: Switch must be re-pressed after forced exit condition

ENTRY CONDITIONS	EXIT CONDITIONS
Pump ON	Pump OFF
No fault on any pack solenoid	Fault on any pack solenoid
Pack/return switch pressed and held	Pack/return switch released
No other control switch pressed	Any control switch pressed
Tailgate closed and locked	Tailgate ajar and not fully open
Hopper cover open	(Tailgate ajar and fully open OK for unload)
Not in lift autocalibration mode	Hopper cover closed

7. Autopack Control

Basic Functionality

In multi-mode, cycle the packer blade a pre-programmed number of cycles (3) and then stop. In intelli-mode, cycle the packer blade once every pre-programmed number of container dumps (4).

Notes: Illuminates Autopack lamp when cycle is active
Switch must be re-pressed after a forced exit condition
The pre-programmed values are not adjustable by field technicians

ENTRY CONDITIONS	EXIT CONDITIONS
Pump ON	Pump OFF
No fault on any pack solenoid	Fault on any pack solenoid
Autopack switch pressed	Autopack stop switch pressed
No other control switch pressed	Any control switch pressed
Tailgate closed and locked	Tailgate ajar and not fully open
Hopper cover open	Hopper cover closed
Not in lift autocalibration mode	

8. Electronic Joystick Operational Requirements

- Joystick selector switch on Control Panel:
  must be set to 'ENABLE'

- Auto trigger on joystick:
  must be triggered prior to first operational input
  must be re-triggered to recover from a forced exit

9. Joystick - Manual Arm Control - Loading

Basic Functionality

- move arm functions when proper conditions are met
- the most functions state is "loading OK" where any motion within the operating zone is permitted provided that Entry Conditions are satisfied
- semi-functional state is manual return to home where only Lift Lower, Slide Retract, and Grip Open are allowed should any Exit Conditions exist
- fully locked out state permits no motion

Note: joystick out of center at neutral condition will never allow arm to enter loading state

ENTRY CONDITIONS	EXIT CONDITIONS
Joystick centered, trigger toggled	Pump switched off
Vehicle speed less than 7mph (11kmph)	Vehicle speed exceeds 7mph (11kmph)
Brake pedal depressed	Brake pedal not depressed
Tailgate not ajar or fully open	Tailgate ajar or fully open
No fault on any arm solenoid or lift position sensor	Fault detected on any arm solenoid
Hopper cover open	Hopper cover close
All return to home conditions OK	Fault detected in joystick

10. Joystick - Manual Arm Control - Return to Home

Basic Functionality

- move arm functions when proper conditions are met
- the most functions state is “loading OK” where any motion within the operating zone is permitted provided that Entry Conditions are satisfied
- semi-functional state is manual return to home where only Lift Lower, Slide Retract, and Grip Open are allowed should any Exit Conditions exist
- fully locked out state permits no motion

ENTRY CONDITIONS	EXIT CONDITIONS
Pump ON	Pump OFF
No fault in lift lower, slide retract, grip open solenoids	Fault on return to home solenoid
No fault on any joystick axis	Fault on joystick axis
Not in lift autocalibration mode	

11. Tailgate Open/Close Control

Basic Functionality

Open/close tailgate when proper conditions are met and operator is pressing the switch in the desired direction

Notes: Tailgate open/close logic is identical to body control logic
Switches must be re-centered if out of neutral at pump-on or after forced exit condition

ENTRY CONDITIONS	EXIT CONDITIONS
Pump ON	Pump OFF
Open/Close switch activated and held	Open/Close switch released
No fault tailgate open/close solenoid (open only)	Fault on tailgate open/close solenoid (open only)
No fault tailgate close solenoid (close only)	Fault on close solenoid (close only)
Arm home	Arm not home
Transmission in neutral	Transmission gear selected
Not in lift autocalibration mode	

12. Indicator/Non-Hydraulic Output Control

Basic Functionality

- **Arm not home indicator:** illuminates control panel warning lamp if grip not fully open, slide not fully retracted, lift position not fully down or when lift position sensor fault present

- **Arm not home and speed exceeds 7mph (11kmph):** illuminates control panel warning lamp and sound alarm if grip not fully open, slide not fully retracted, lift position not fully down or when lift position sensor fault present AND speed exceeds 7mph (11kmph)

- **System warning light blinks warning codes when present:** see Flash Code Values Table

- **Tailgate ajar indicator:** illuminates control panel warning lamp, sound in-cab alarm and back-up alarm when tailgate unlocked

- **Autopack indicator:** illuminates Autopack switch warning lamp when Autopack active

- **Access door open:** illuminates control panel warning lamp, sound in-cab alarm when access door is open

13. Arm Lift Calibration Routine

This routine is provided to automatically calibrate the initiation currents for the lift raise and lift lower functions. It uses cylinder position information to determine the current level at which motion in either direction begins. It is intended for periodic use by trained maintenance technicians only in order to reset the pre-programmed operating cushions at the top and bottom ends of lift motion. It is designed to be initiated through a sequence of button presses.

The calibration routine should be used when the machine has reached normal operating temperature. After the routine has executed, the calibration values will automatically be updated and the arm will be ready to use for normal operation. All other hydraulic circuits will be locked out during calibration.

INFO

If the ECM is ever washed after a calibration routine has been performed, the calibration values will revert to their default values and the calibration routine will have to be re-run.

CAUTION

The routine will move the lift cylinder without warning.
Be sure to leave enough space for the arm to operate and cordon off the area to avoid inadvertent contact.
Warn other shop personnel that the calibration is being conducted.
Turning off the pump at any time will stop the routine.

Minimum Operating Conditions (must be met during entire calibration sequence)
Pump ON
Joystick centered
Transmission in neutral

Start Condition (must be met before and during button press)
Arm home

Calibration Sequence

1. Simultaneously press and hold **manual pack**, **manual return** and **autopack** buttons for more than 3 seconds
2. While maintaining hold on the **autopack** button, release **manual pack** and **manual return** buttons
3. Maintain **autopack** button depressed for additional 3+ seconds after releasing other buttons. Once the auto-calibration routine has started, **autopack** button can be released
4. Lift cylinder motion indicates calibration routine has successfully started
5. Arm will rise to a center position, rise slightly further, lower slightly, rise slightly, lower slightly, and then it will travel a full stroke
6. While the arm is on its way down from a full stroke (returning to home), press and hold the **autopack** button again for 3+ seconds
7. The arm will travel up and down 5 times. After this has been completed, and the arm is at the home position, turn the ignition key off
8. After 10 seconds, turn the ignition key back on and start the vehicle. This ensures that the calibration is complete.

? **INFO**

Use the pump OFF switch or un-center the joystick as an emergency stop to end the auto-calibration early if necessary.
No calibration values will be updated unless the entire calibration completes successfully.

14. Diagnostic Flash Code Values

The Caterpillar electronic control module monitors certain components in the system for faults. The valve solenoids, joystick and position sensing cylinder are all monitored by the controller. If the control module detects a fault in these systems, it will initiate a series of warning flashes in sequence to aid in diagnosing the fault quickly. The red system warning light mounted onto the control panel (rear) will flash in a series of three numerical sets. Once this sequence of flashes is complete, the warning light will extinguish briefly and then the sequence begins again. The technician must count this sequence of flashes and refer to the chart below to determine the faulty circuit/component.

For example: the system warning light flashes 6 times, pauses, flashes 3 times, pauses, flashes 2 times, pauses for longer, then repeats;
this sequence is **6.3.2** indicating a problem with **Lift arm grabber open solenoid.**

? **INFO**

The yellow warning light mounted onto the control panel (front) indicates that the system has failed completely and has shutdown. This may be accompanied by a flash sequence in the system warning light.

Note: functions not directly controlled by the Caterpillar controller, such as the tailgate and the hopper cover will not initiate a flash sequence, or indicate system failure in the event of a fault.

Outputs

FAULT DESCRIPTION	FLASH CODE
Lift arm raise solenoid	6.3.4
Lift arm lower solenoid	6.3.5
Lift arm slide extend solenoid	6.3.6
Lift arm slide retract solenoid	6.3.7
Lift arm grabber close solenoid	6.3.3
Lift arm grabber open solenoid	6.3.2
Packer blade extend solenoid #1	6.3.8
Packer blade retract solenoid #1	6.3.9
Packer blade extend solenoid #2	6.4.2
Packer blade retract solenoid #2	6.4.1

Inputs

FAULT DESCRIPTION	FLASH CODE
Lift arm cylinder position sensor	6.1.1
Joystick X-Axis (slide)	4.3.3
Joystick Y-Axis (lift)	4.3.2

Miscellaneous System Issues

FAULT DESCRIPTION	FLASH CODE
Harness code invalid	4.1.2
System voltage	5.1.1
8v sensor supply	5.1.7
5v sensor supply	5.1.6

The flash codes will alert the technician to a failure in the circuit indicated. The cause may be a failed component such as a joystick or position sensing cylinder, or as simple as a loose connector or broken wire. Flash codes mean that an exit condition exists and the related function will not operate.

The cause of the flash code should be investigated first by a visual check of the components related to that function.

15. Switch Input Verification

Switch Input Verification aims to pinpoint faults by identifying individual wires at the Electronic Control Module, and testing through the connector to verify voltage readings.

Using an Ohm meter set to the VOLT function, technicians may test the relevant pins to determine if voltages are correct at the ECM. Most circuits are tested for a 0v condition or a 12v condition; the joystick circuits are tested for a voltage range.

The pin to pin identification charts allow the technician to make continuity checks of the harnesses between the ECM and the relevant in cab control or valve solenoid etc.

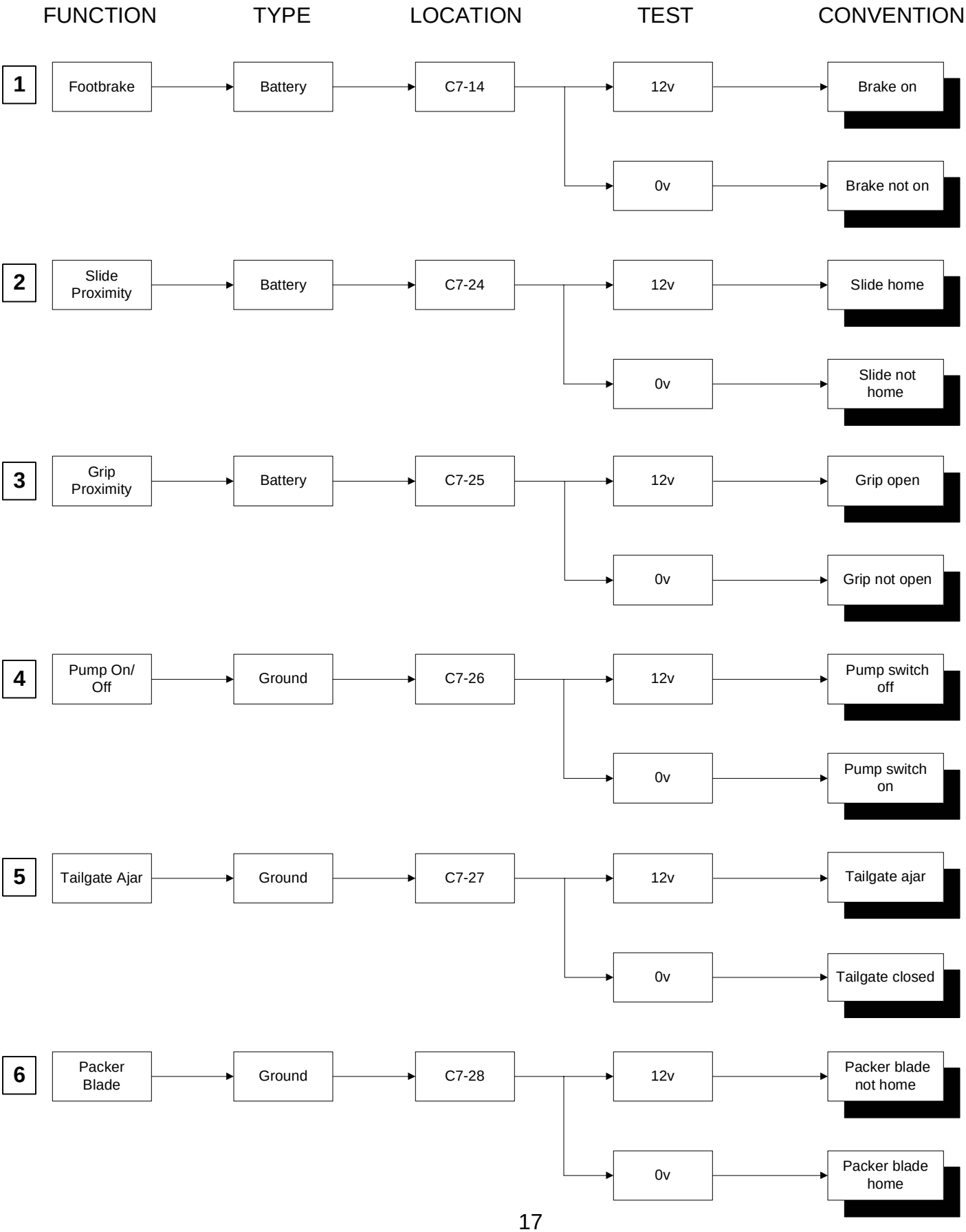
Use the following charts for reference.

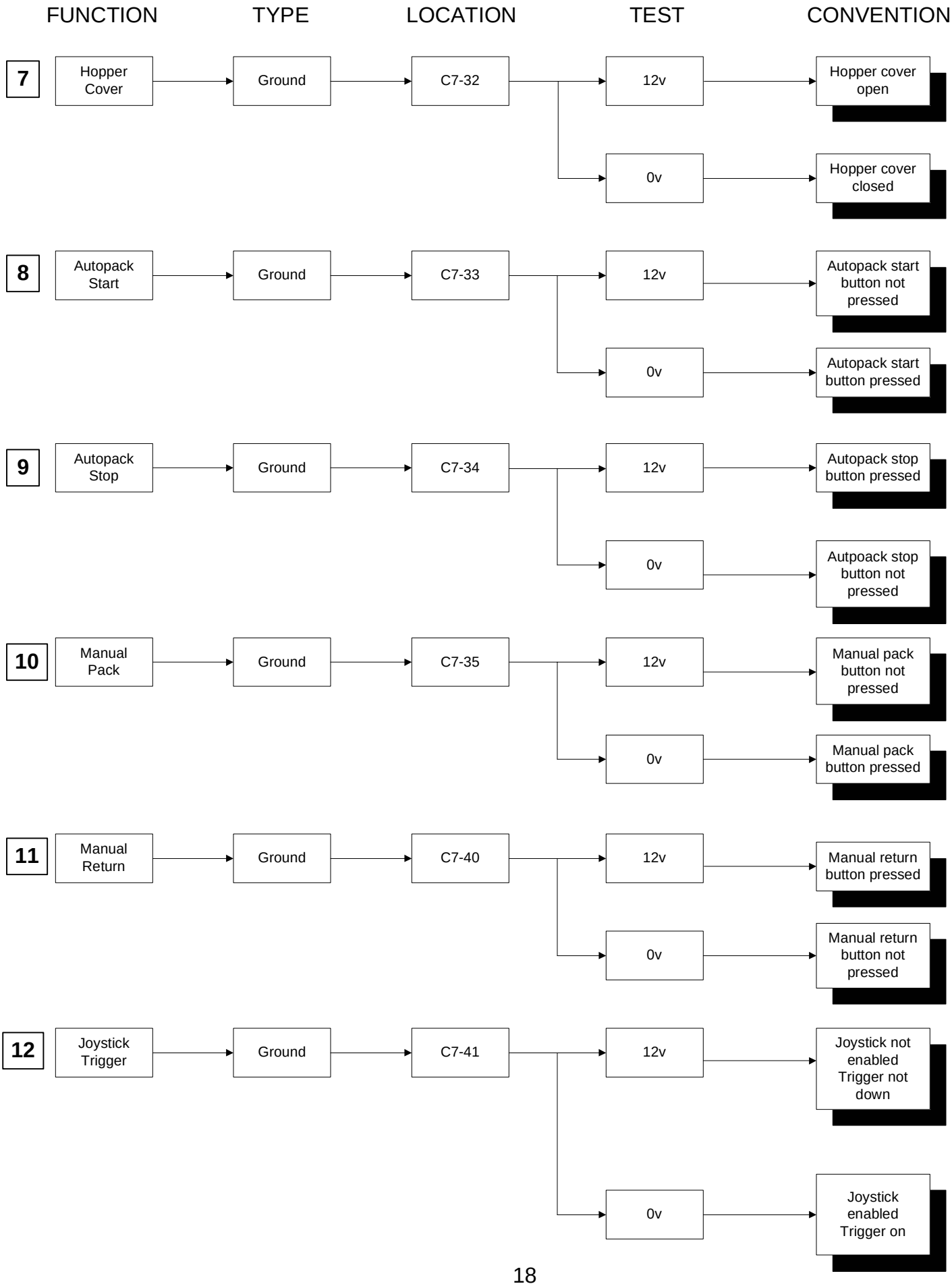
1. Footbrake
2. Slide proximity
3. Grip proximity
4. Pump on/off
5. Tailgate ajar
6. Packer blade
7. Hopper cover
8. Autopack start
9. Autopack stop
10. Manual pack
11. Manual return
12. Joystick trigger
13. Autopack mode
14. Speed lockout
15. Half pack/pressure switch
16. Tailgate fully open
17. Grip open rocker
18. Grip close rocker

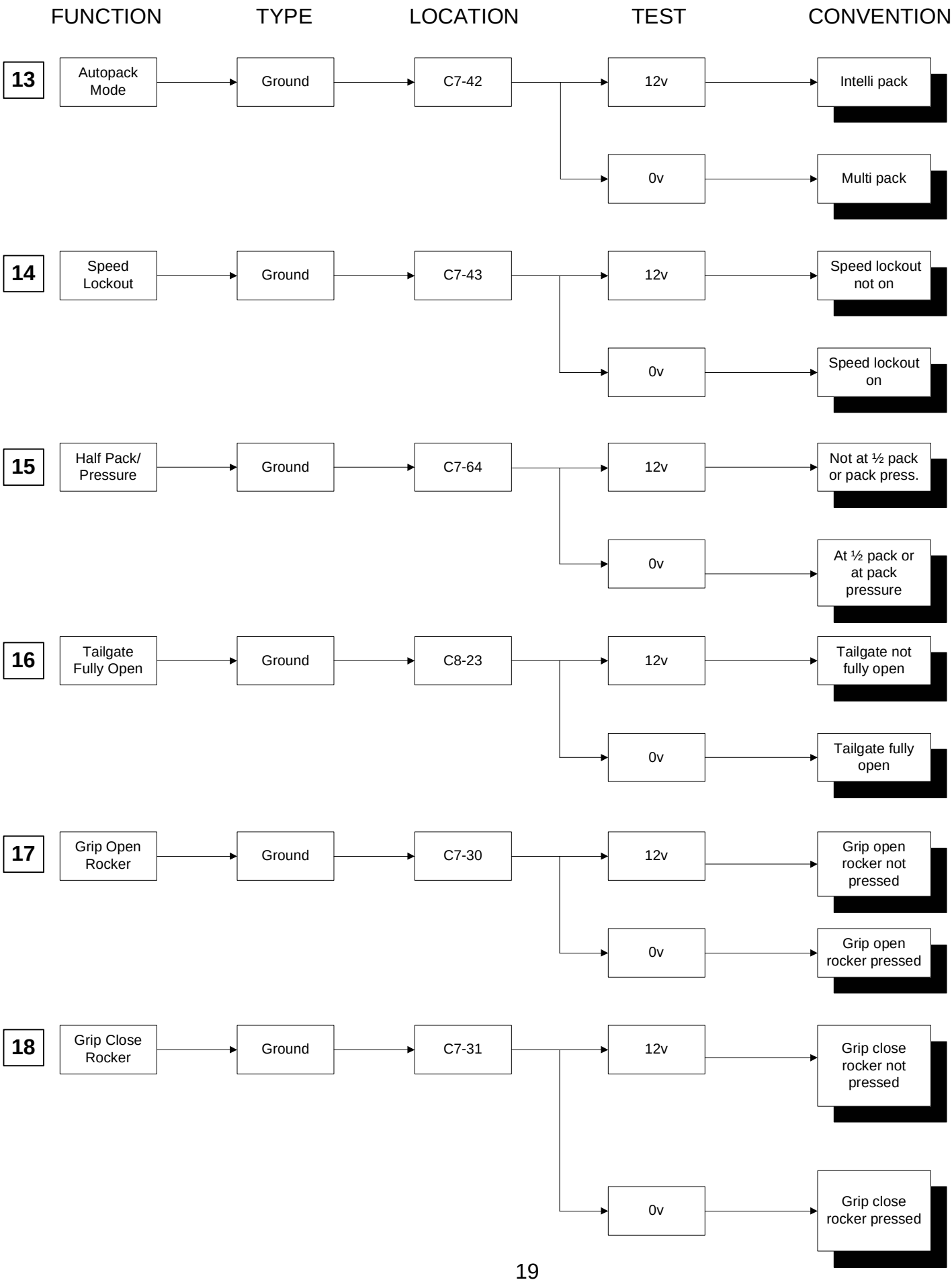
Analog Joystick Input Verification

1. 5v power supply
2. Lift raise/lower
3. Slide extend/retract

Switch Input Verification




FUNCTION
TYPE
LOCATION
TEST
CONVENTION
7
Hopper Cover
Ground
C7-32
12v
Hopper cover open
0v
Hopper cover closed
8
Autopack Start
Ground
C7-33
12v
Autopack start button not pressed
0v
Autopack start button pressed
9
Autopack Stop
Ground
C7-34
12v
Autopack stop button pressed
0v
Autpoack stop button not pressed
10
Manual Pack
Ground
C7-35
12v
Manual pack button not pressed
0v
Manual pack button pressed
11
Manual Return
Ground
C7-40
12v
Manual return button pressed
0v
Manual return button not pressed
12
Joystick Trigger
Ground
C7-41
12v
Joystick not enabled Trigger not down
0v
Joystick enabled Trigger on


FUNCTION
TYPE
LOCATION
TEST
CONVENTION
13
Autopack Mode
Ground
C7-42
12v
Intelli pack
0v
Multi pack
14
Speed Lockout
Ground
C7-43
12v
Speed lockout not on
0v
Speed lockout on
15
Half Pack/ Pressure
Ground
C7-64
12v
Not at ½ pack or pack press.
0v
At ½ pack or at pack pressure
16
Tailgate Fully Open
Ground
C8-23
12v
Tailgate not fully open
0v
Tailgate fully open
17
Grip Open Rocker
Ground
C7-30
12v
Grip open rocker not pressed
0v
Grip open rocker pressed
18
Grip Close Rocker
Ground
C7-31
12v
Grip close rocker not pressed
0v
Grip close rocker pressed

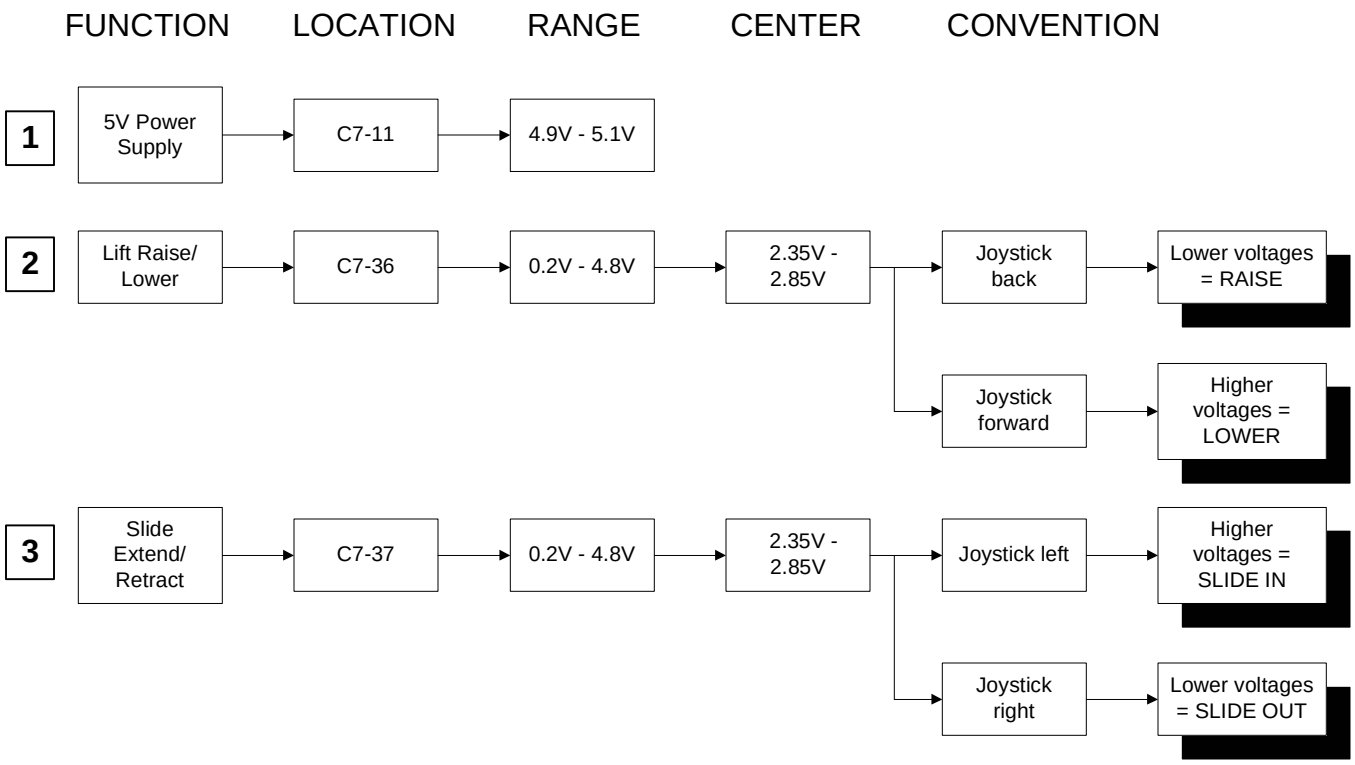
Analog Joystick Input Verification

The joystick can be tested for failure condition by recording the voltage present at the relevant pins in the ECM plug. Using an Ohm meter set to the VOLT function, test the relevant pins to determine voltages as the joystick is operated (see chart below). Readings outside of those listed indicate a faulty joystick.

? INFO

RANGE - Voltage must never leave range at extremes of travel

CENTER - Voltage must fall into center range when the joystick is in neutral



? INFO

If the joystick fails outside of the voltage ranges shown here, it will also flash a diagnostic code on the system warning light.

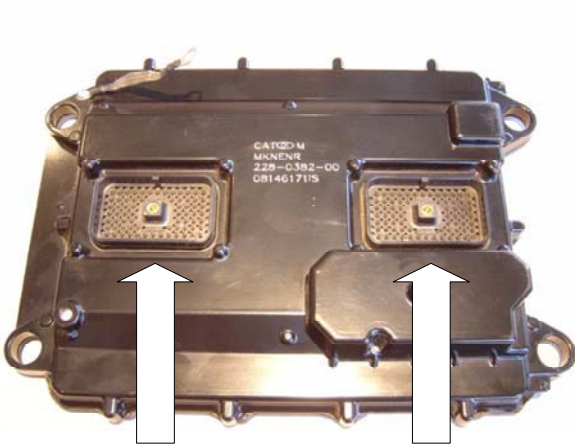
For example, should the slide axis fail outside of 0.2v - 4.8v, flash code **4.3.3** will illuminate

If the joystick fails completely, it will not flash a code. Refer to troubleshooting chart 2 to make power and ground checks

16. Connectors

The Caterpillar control system uses sealed Deutsch connectors to connect wiring harnesses to major control components. It is critical to maintain integrity of connectors, pins, seals and wires to ensure the system continues to function correctly. Special tools are required to service Deutsch connectors.

Caterpillar Electronic Control Module



C-C8 **C-C7**

The Caterpillar system is controlled through the ECM mounted underneath the main valve.

Two harnesses connect to the ECM via Deutsch connectors into the ECM multi-pin plugs.

Each connector is keyed differently and cannot be misassembled. Uses a standard 4mm allen bolt and the seal is provided by a blue rubber gasket in the harness plug.

The harness plugs are identified as C-C7 and C-C8. the plug closest to the prominent bulge in the ECM is C-C7

?

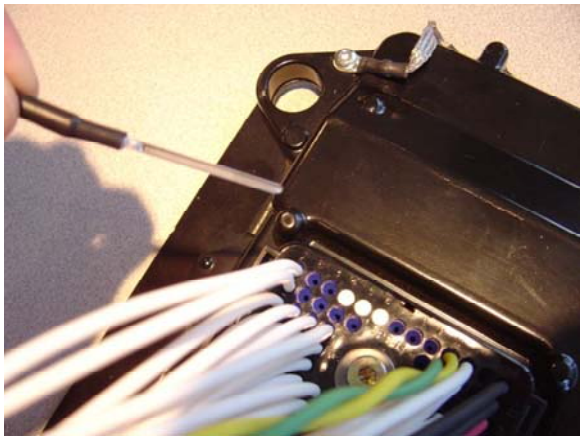
It is not necessary to disconnect plugs in order to conduct system troubleshooting via Input Verification tests. Unnecessary disruption of plugs may lead to damage of pins and seals.

INFO

To gain easier access to the plugs, dismount the ECM and suspend it from the valve table using tie-wraps. (Ensure the ground strap remains connected)

Connectors

The ECM plugs secure the harness connectors to the ECM pins. Not all of the available spaces are used. Unused spaces must be fitted with sealing plugs.
Refer to Pin out charts page 24-25 for correct pin placement.
Switch input verification test locations refer to this numbered location in the plug to take the readings



During switch input verification tests special ‘spoons’ are required to contact the pin inside the sealed plug in order to take readings. The wire from the spoon is connected to the test meter.

?

INFO

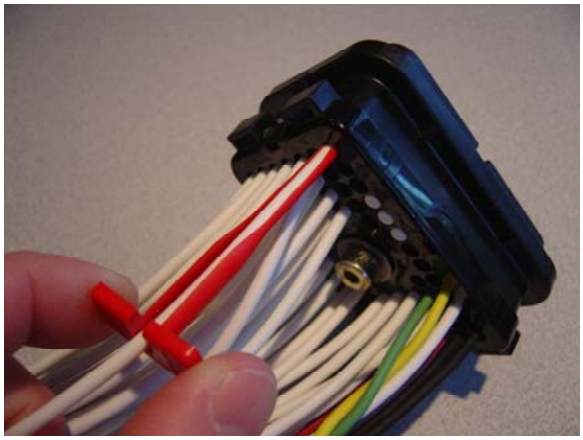
It is critical to maintain effective sealing at this plug.

Ingress of contamination will seriously damage the ECM

No other tools are to be used in this application

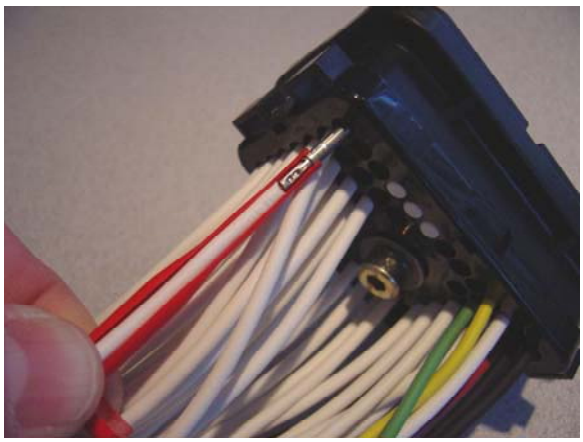
Connectors

If the need arises, wires may be pulled from the Deutsch connector using a special pin puller shown at left



Clip the pin puller onto the wire casing and gently insert the pin puller into the connector.

Feel the wire release as the terminal is unlocked from the connector



Pull the wire out of the connector, followed by the pin puller.

To replace the wire, simply reinsert the terminal into the connector and push in until a click is felt as the terminal is retained by the connector

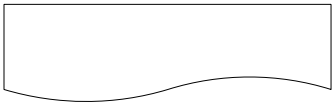
1	Key-switch	Unused	Unused	Unused	Unused	Unused	Unused	Unused	CAT data link +	+5v Sensor power	Unused	Machine ECM ground	13
14	Foot brake	Unused	Unused	Unused	Unused		Joystick ground	CAT data link-	Unused	Unused	Unused	Machine ECM ground	23
24	Slide Exended Proxy	Grab and arm raised proxy	Pump on/off	Tailgate Ajar			Packer blade home	Unused	Unused			Machine ECM power (unsw)	31
32	Hopper cover	Autopack start	Autopack stop	Manual Pack		C7	Joystick arm raise/lower	Joystick slide extend/retract	Unused			Machine ECM power (unsw)	39
40	Manual Return	Joystick trigger	Autopack mode	Speed lockout			+8v sensor power	+8v sensor return	Unused			Machine ECM power (unsw)	47
48	Lift Arm Raise Solenoid	Lift Arm Lower Solenoid	Lift, Slide Returns	Slide retract solenoid	Slide extend solenoid		Unused	Unused	Packer blade return			Machine ECM ground	57
58	Grabber Close Solenoid	Grabber Open Solenoid	Grabber, Packer Blade Returns	Packer Blade Pack Sol # 2	Packer Blade pack Sol #1	Unused	Half pack signal	Packer blade return sol #2	Packer blade return sol #1	Unused	Unused	Harness code ground	70

1	Unused	Throttle Limit Source	LED Indicator Common	Unused	Unused	Unused	Unused	Unused	Arm not home and >7mph	Arm not home	Autopack relay signal	Electronic throttle	System warning light	13
14	Unused	Lift Arm Cylinder Posn.	Unused	Unused	Unused				System failure light	Unused	Unused	Unused	Tailgate tilt switch	23
24	Unused	Unused	Unused	Unused						Top cushion proximity	Load zone proximity	Grab control	Release control	31
32	Unused	Unused	Unused	Unused			C8			Unused	Unused	Unused	Unused	39
40	Unused	Unused	Unused	Unused						Unused	Unused	Unused	Unused	47
48	Unused	Unused	Unused	Unused	Unused				Unused	Unused	Unused	Unused	Unused	57
58	Unused	Harness Code Loc. 3	Harness Code Loc. 2	Harness Code Loc. 1	Harness Code Loc. 0	Unused	Data link -	Data link +	BATT -	Unused	Unused	Unused	Unused	70

17. Troubleshooting Charts

The following pages detail the steps necessary to investigate common faults with the Caterpillar electronic control system.

Indicates a step to be taken



Contains notes and reminders

Conclusion

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INFO

Technical support and further troubleshooting advice is available by calling the FSDepot call center toll-free (877) 800.1111

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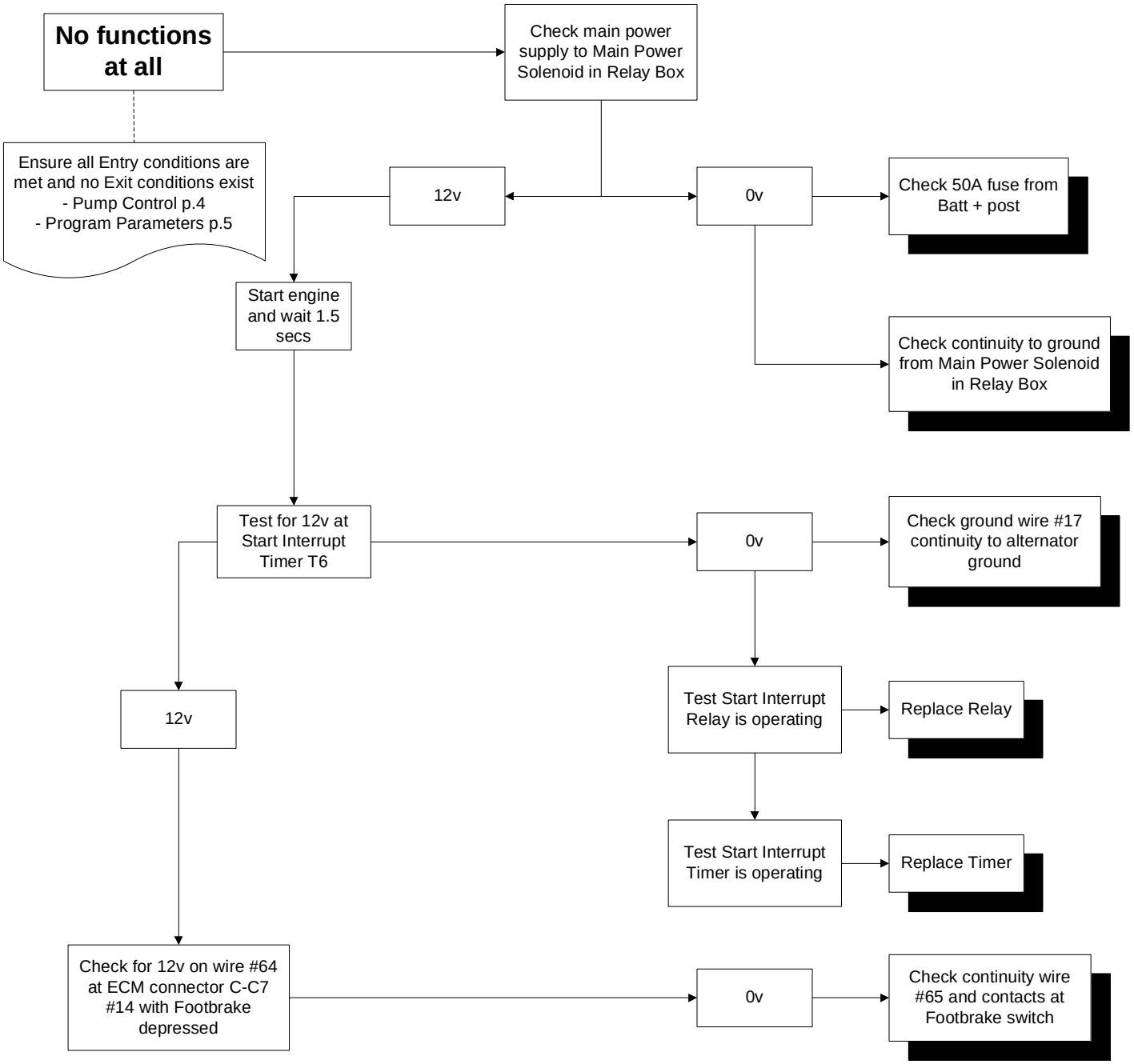
CAUTION

The main operating hydraulic valves are equipped for use with manual handles. These are supplied loose with the unit. Handles are for use by qualified maintenance personnel only and should not be left fitted to an operational unit. Use of the handles for system troubleshooting and verification will bypass all electrical lockouts, safety interlocks and operational cushions.
The handles can be used to quickly identify which part of the system is at fault, hydraulic or electrical. For example a handle may be fitted to the work section of the function in question. With the pump on, operate the handle and if the function is operating, then the fault lies in the electrical system.

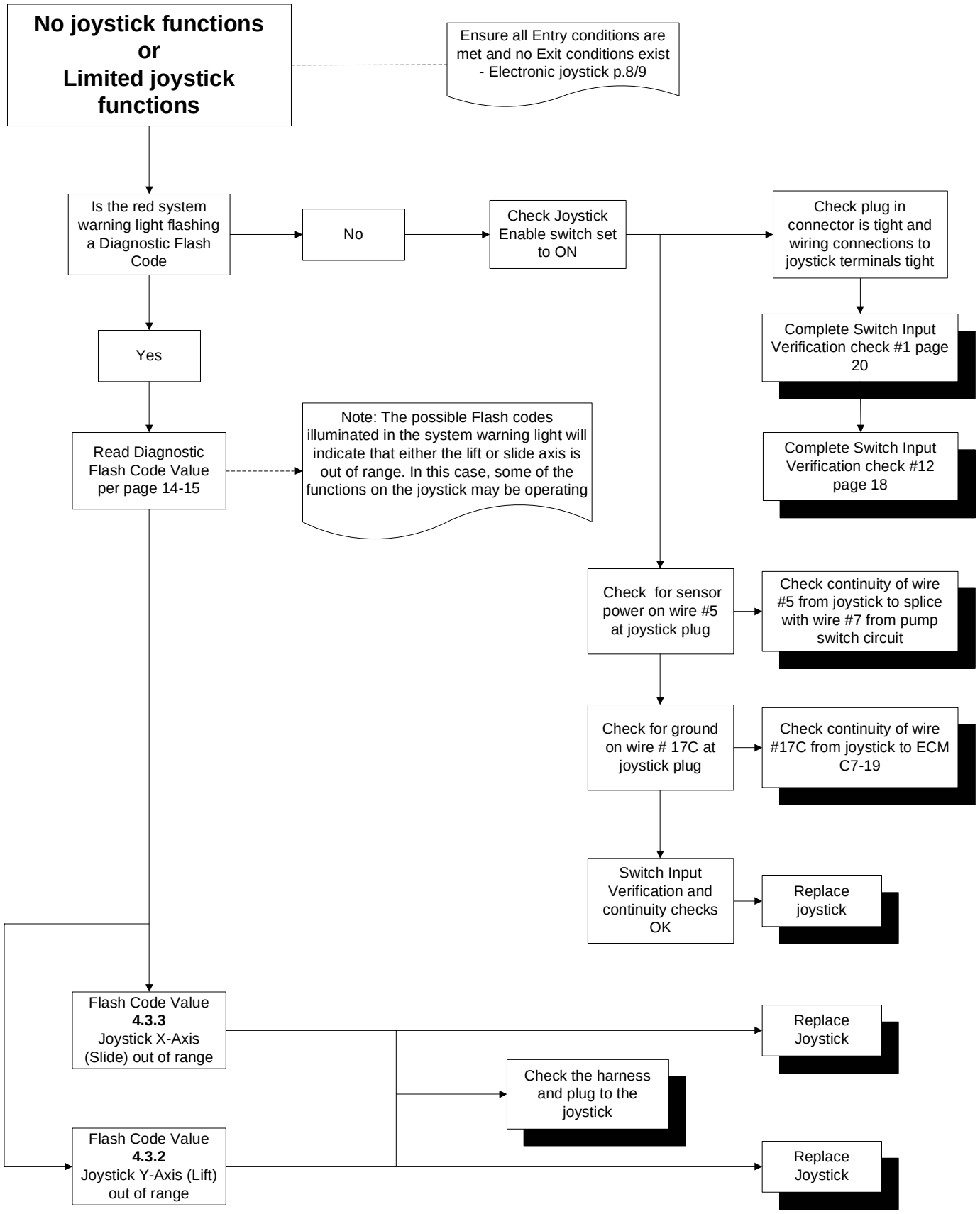
Troubleshooting Charts

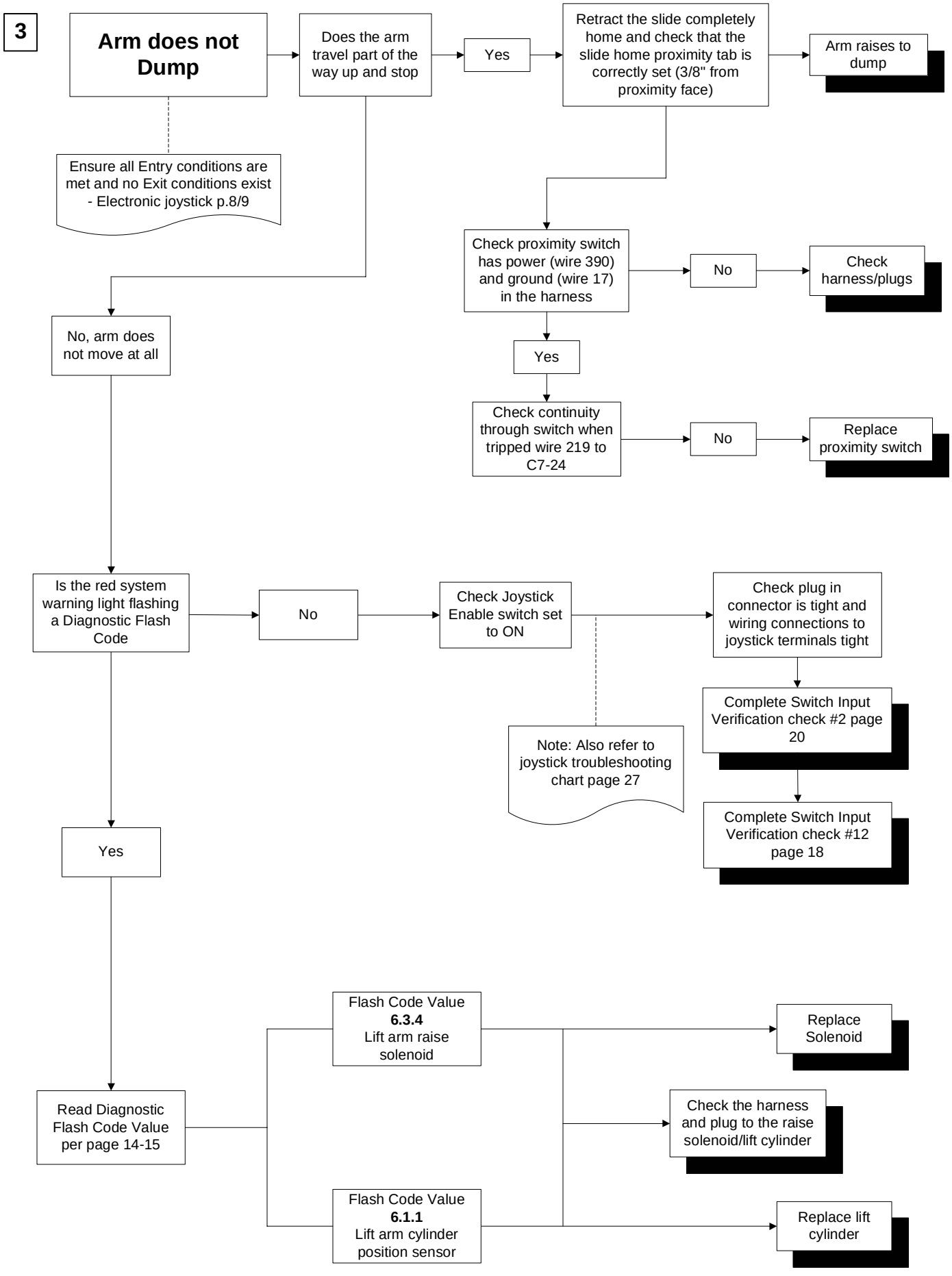
1. No functions at all
2. No joystick functions or limited joystick functions
3. Arm does not dump
4. Packer blade will not pack
5. Packer blade will not return

1

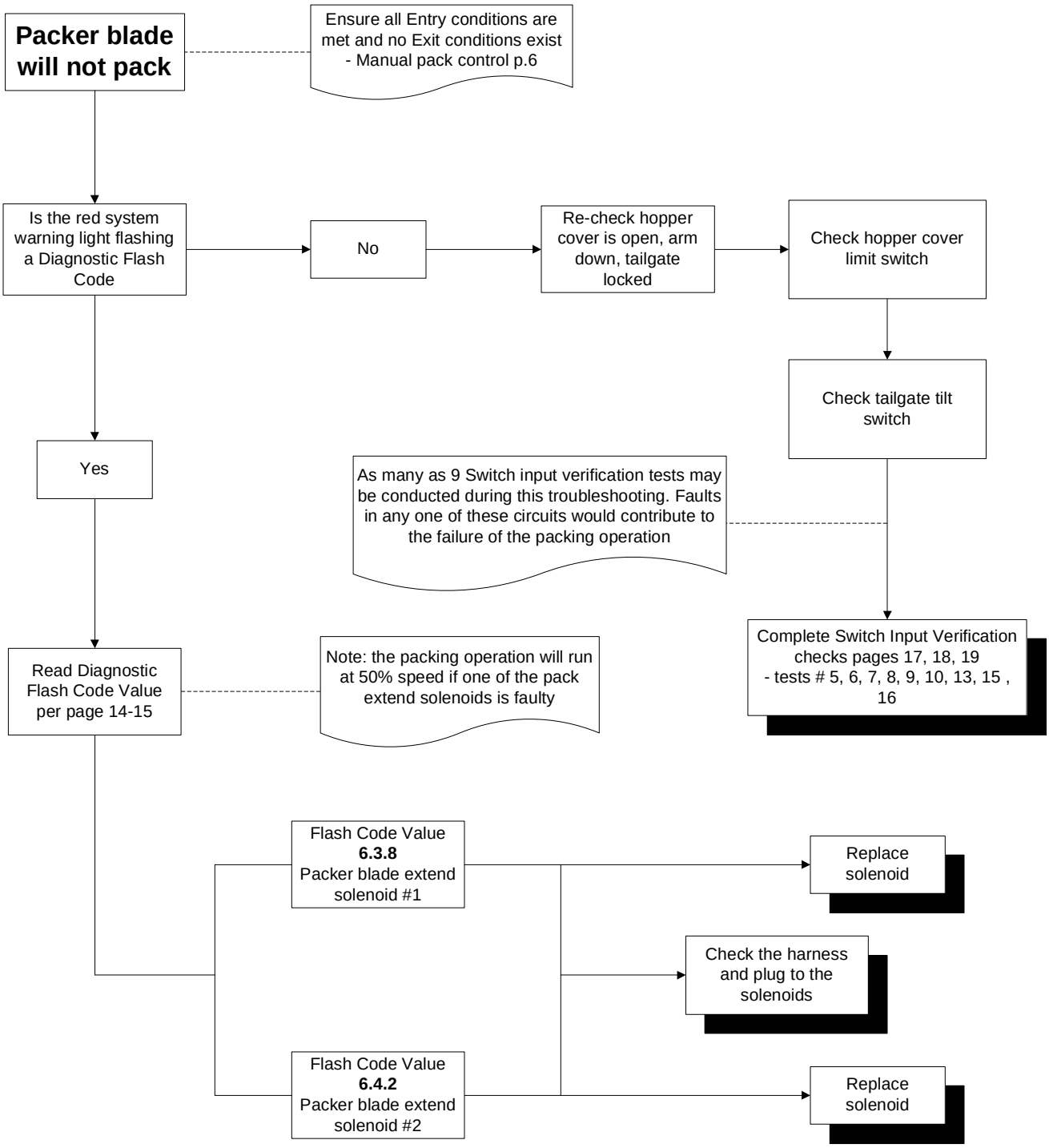

No functions at all
Check main power supply to Main Power Solenoid in Relay Box
Ensure all Entry conditions are met and no Exit conditions exist
- Pump Control p.4
- Program Parameters p.5
12v
0v
Check 50A fuse from Batt + post
Start engine and wait 1.5 secs
Check continuity to ground from Main Power Solenoid in Relay Box
Test for 12v at Start Interrupt Timer T6
0v
Check ground wire #17 continuity to alternator ground
12v
Test Start Interrupt Relay is operating
Replace Relay
Test Start Interrupt Timer is operating
Replace Timer
Check for 12v on wire #64 at ECM connector C-C7 #14 with Footbrake depressed
0v
Check continuity wire #65 and contacts at Footbrake switch

2

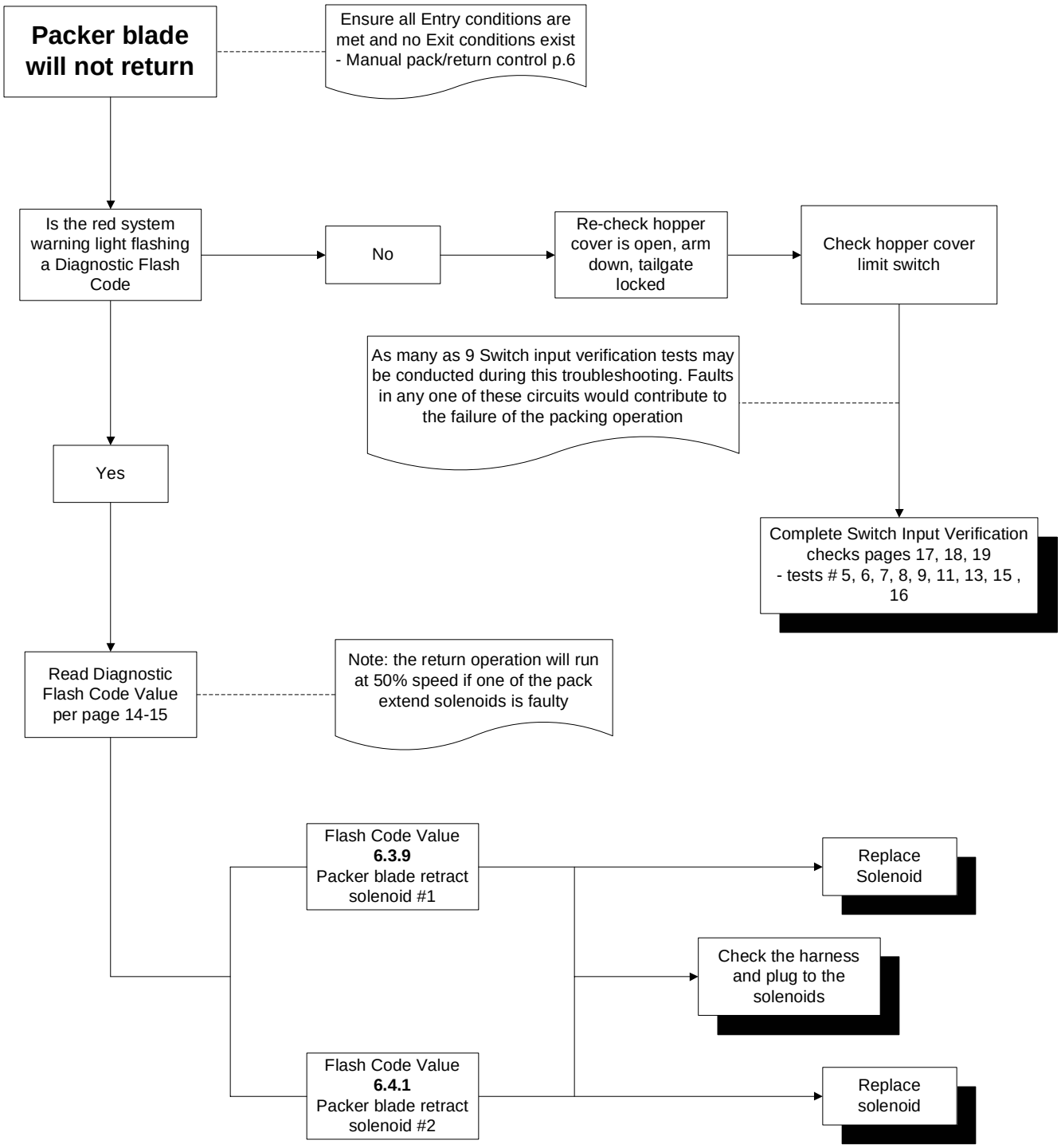

No joystick functions or Limited joystick functions
Ensure all Entry conditions are met and no Exit conditions exist - Electronic joystick p.8/9
Is the red system warning light flashing a Diagnostic Flash Code
No
Check Joystick Enable switch set to ON
Check plug in connector is tight and wiring connections to joystick terminals tight
Complete Switch Input Verification check #1 page 20
Yes
Read Diagnostic Flash Code Value per page 14-15
Note: The possible Flash codes illuminated in the system warning light will indicate that either the lift or slide axis is out of range. In this case, some of the functions on the joystick may be operating
Complete Switch Input Verification check #12 page 18
Check for sensor power on wire #5 at joystick plug
Check continuity of wire #5 from joystick to splice with wire #7 from pump switch circuit
Check for ground on wire # 17C at joystick plug
Check continuity of wire #17C from joystick to ECM C7-19
Switch Input Verification and continuity checks OK
Replace joystick
Flash Code Value 4.3.3 Joystick X-Axis (Slide) out of range
Replace Joystick
Check the harness and plug to the joystick
Flash Code Value 4.3.2 Joystick Y-Axis (Lift) out of range
Replace Joystick


3
Arm does not Dump
Does the arm travel part of the way up and stop
Yes
Retract the slide completely home and check that the slide home proximity tab is correctly set (3/8" from proximity face)
Arm raises to dump
Ensure all Entry conditions are met and no Exit conditions exist - Electronic joystick p.8/9
Check proximity switch has power (wire 390) and ground (wire 17) in the harness
No
Check harness/plugs
Yes
Check continuity through switch when tripped wire 219 to C7-24
No
Replace proximity switch
No, arm does not move at all
Is the red system warning light flashing a Diagnostic Flash Code
No
Check Joystick Enable switch set to ON
Check plug in connector is tight and wiring connections to joystick terminals tight
Complete Switch Input Verification check #2 page 20
Note: Also refer to joystick troubleshooting chart page 27
Complete Switch Input Verification check #12 page 18
Yes
Read Diagnostic Flash Code Value per page 14-15
Flash Code Value 6.3.4 Lift arm raise solenoid
Replace Solenoid
Check the harness and plug to the raise solenoid/lift cylinder
Flash Code Value 6.1.1 Lift arm cylinder position sensor
Replace lift cylinder

4


Packer blade will not pack
Ensure all Entry conditions are met and no Exit conditions exist - Manual pack control p.6
Is the red system warning light flashing a Diagnostic Flash Code
No
Re-check hopper cover is open, arm down, tailgate locked
Check hopper cover limit switch
Check tailgate tilt switch
Yes
As many as 9 Switch input verification tests may be conducted during this troubleshooting. Faults in any one of these circuits would contribute to the failure of the packing operation
Complete Switch Input Verification checks pages 17, 18, 19 - tests # 5, 6, 7, 8, 9, 10, 13, 15 , 16
Read Diagnostic Flash Code Value per page 14-15
Note: the packing operation will run at 50% speed if one of the pack extend solenoids is faulty
Flash Code Value **6.3.8** Packer blade extend solenoid #1
Replace solenoid
Check the harness and plug to the solenoids
Flash Code Value **6.4.2** Packer blade extend solenoid #2
Replace solenoid

5


Packer blade will not return
Ensure all Entry conditions are met and no Exit conditions exist - Manual pack/return control p.6
Is the red system warning light flashing a Diagnostic Flash Code
No
Re-check hopper cover is open, arm down, tailgate locked
Check hopper cover limit switch
As many as 9 Switch input verification tests may be conducted during this troubleshooting. Faults in any one of these circuits would contribute to the failure of the packing operation
Yes
Complete Switch Input Verification checks pages 17, 18, 19 - tests # 5, 6, 7, 8, 9, 11, 13, 15 , 16
Read Diagnostic Flash Code Value per page 14-15
Note: the return operation will run at 50% speed if one of the pack extend solenoids is faulty
Flash Code Value **6.3.9** Packer blade retract solenoid #1
Replace Solenoid
Check the harness and plug to the solenoids
Flash Code Value **6.4.1** Packer blade retract solenoid #2
Replace solenoid

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